

SUBJECT: CONFAC II Summary - Case 620

DATE: September 30, 1969

FROM: J. E. Waldo

MEMORANDUM FOR FILE

~~CONFAC II~~

CONFAC II, a general computer program for the determination of radiant-interchange configuration and form factors, has been operational on the Univac 1108 at Bellcomm since August 1968 and was converted to EXEC 8 in July 1969. The original copy of the program was provided by R. E. Durkee/MSO and has operated bug-free from the beginning. The operational problems have been the fault, invariably, of the users lacking extensive use or day-to-day familiarity with the program. Despite appearances or first suspicions, this is so. This summary is the result of this exercise in fault isolation. It contains notes from the CONFAC II manual* and some of the elusive causes of errors the general user will recognize (e.g. Class 8 Multisurface input cannot be in NAMELIST format.)

The first three pages identify for each class the general description of the class surfaces, whether Type 1 or 2, the required input data and format, notes on generated data, and miscellaneous comments. The fourth page summarizes factor requests and data dimension restrictions.

It would be useful to have a CONFAC checklist, which the casual user could follow methodically to avoid the more common errors. Suggestions for such a checklist and any corrections or updates to the summary data would be appreciated by the author.

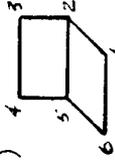
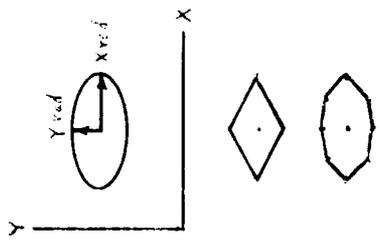
J. E. Waldo

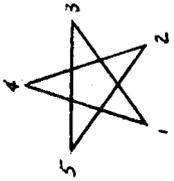
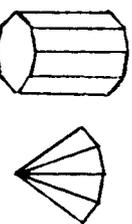
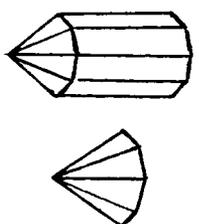
J. E. Waldo

1022-JEW-cf

*For a complete description, the theory, and the details of CONFAC II see: K. A. Toups, A General Computer Program for the Determination of Radiant-Interchange Configuration and Form Factors - CONFAC II, North American Aviation SID 65-1043-2, October 1965.

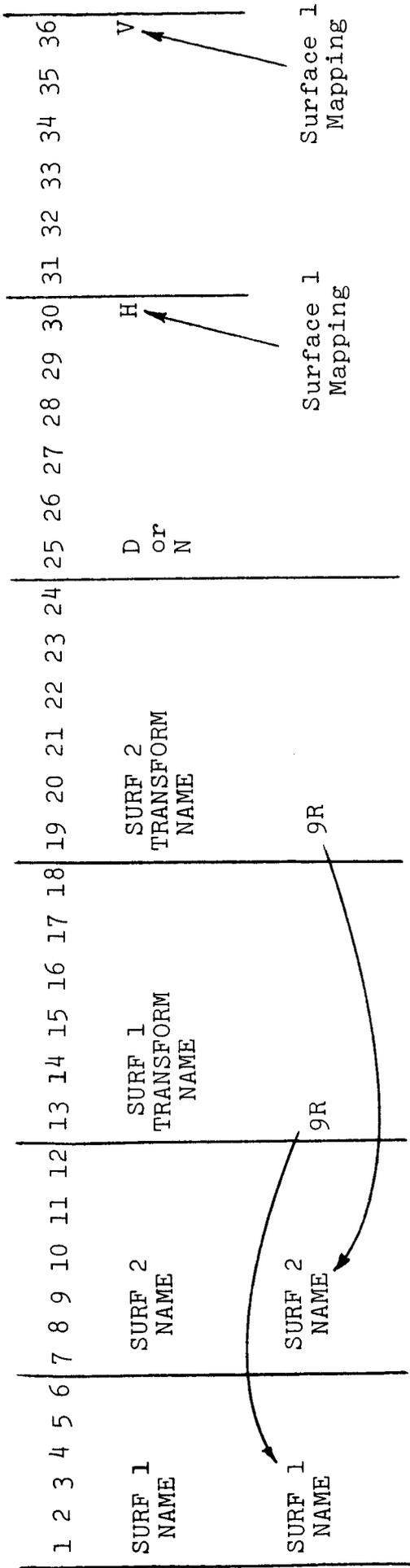
CONFAC II - SUMMARY

General Description	Surf 1 or 2	Input Data	Generated Data	Comments
Class 1 Plane polygon (squares, rectangles) 	1,2	Class 1 (col. 1) Names (col. 2-6) No. of points Coordinates of points CCW entry required 9R - not input data - used in Factor Request	-Generates orientation vector defining active face -Surface 1 Auxiliary transformation Pt. 1, origin Line I2, x axis	-No point connections data entered -No internal check for plane -Retains orientation vector
Class 2 Non plane polygon (and bridge-line) 	2	1SURF1-----9R 1 6 8 14 Class 2 Name No. of points Coords. of points CCW entry required 9R applies	Does not generate orientation vector	-No point connections data entered -Only active surface should be seen by Surface 1
Class 3 Plane polygon (Internally generated) disks circles ellipses octagons 	1,2	Class 3 Name No. of sides (>3) Coords. of center X axis radius Y axis radius 9R applies and Transformation	-Generates plane polygon based on the ellipse	

General Description	Surf 1 or 2	Input Data	Generated Data	Comments
Class 4 Plane polygon Use Class 1		Class 4 Name No. of points Coords. of first point Connections to first point, ≥4 Coords. of second point Connections, etc. 9R applies		-Can generate figures such as star by indicating connections
Class 5 -Nonplanar -Solids SILFAC simple	2 2	Class 5 Name No. of points Coords. of first point Connections of first point Connections of 2nd point Connections of 2nd, etc.	 -SILFAC simple mode	*Require 4 connections (2,5,0.0) If need more than 4, then list same point coordinates again
Class 6 -Nonplanar -Solids Internally generated connections SILFAC simple	2 2	Class 6 Name No. of sides No. of cross-sections Coords. of 1st center X axis radius of 1st cross section Y axis radius of 1st cross section Z coord. of 2nd X axis radius of 2nd Y axis radius of 2nd, etc.	 -SILFAC simple Numbers Internally	-All cross sections have same number of sides -Vert. axis Z axis, only one centerline

General Description	Surf 1 or 2	Input Data	Generated Data	Comments
Class 7 Sphere	2	Class 7 Name Radius Coordinates of center		
Class 8 Multisurface SILFAC complex	2	Class 8 NO NAMELIST Name 1-6 1st name 7-12 transformation name 13-18 2nd name 19-24 transformation name, etc. Bridgeline, if required, is entered as a Class 2 figure and then included under Class 8 multi-surface First coord. 8COPLA Second coord. 1PLA9 9TPLA9 1PLA119TPL11	SILFAC complex	-Bridgeline Class 2. If try to enter as Class 1, then computer tries to establish orientation vector. -Bridgelines should pierce the surfaces. -Watch data dimension restrictions.
Class 9 Transformation Data	1,2	Class 9 Name No. of 1st point to be transformed Coords. of 1st pt. No. of 2nd point Coords. of 2nd pt. No. of 3rd point Coords. of 3rd pt.		

Factor Requests



Data Dimension Restrictions

A maximum of 100 boundary points (300 coordinates) for each surface entered as class 1, 2, 4 and 5, or assembled under a class 8 entry. Under class 8, watch for combined points added to original points total less than 100.

A maximum of 100 points, equivalent to 100 sides, generated by class 3 data.

For class 6 data, the number of sides plus one, times the number of cross sections, must not exceed 101 if planar, and 102 if nonplanar. The number of cross sections must not exceed 11.

The grand total of surfaces entered or generated by class 4, 5 and 6 must not exceed 10.

The grand total of surfaces entered or generated by classes 1, 2, 3, 4, 5 and 6 must not exceed 17.

The total number of class 7 data must not exceed 10.

The total number of class 8 data entries must not exceed 12. No more than 6 surfaces may be entered together as a multisurface.

The total number of class 9 data must not exceed 10. (Does not include 9R)

BELLCOMM, INC.

Subject: CONFAC II Summary

Distribution List

NASA Headquarters

C. P. Mook/RV-1

MSC

R. G. Brown/ES-16

R. E. Durkee/ES-5

R. L. Frost/KS

MSFC

H. Trucks/R-P&VE-PTP

North American Rockwell

K. E. Toups

U.C.L.A.

P. F. O'Brien

Bellcomm

A. P. Boysen

D. R. Hagner

W. G. Heffron

B. T. Howard

J. Z. Menard

J. M. Nervik

I. M. Ross

J. W. Timko

R. L. Wagner

M. P. Wilson

Departments 2031, 2034 Supervision

Department 1024 File

Central Files

Library